

United States Government

Department of Energy
Berkeley Site Office

memorandum

DATE: 11/12/08

REPLY TO

ATTN OF: SC-BSO: Richards


SUBJECT: **INTEGRATED SAFETY MANAGEMENT (ISM) DECLARATION FOR BERKELEY SITE OFFICE**

TO: George J. Malosh, Deputy Director for Field Operations, SC-3, FORS

In accordance with DOE Manual 450.4-1, *Integrated Safety System Manual*, the U.S. Department of Energy (DOE) Berkeley Site Office (BSO) has completed its Integrated Safety Management System (ISMS) annual effectiveness review of the Site Office and Lawrence Berkeley National Laboratory (LBNL). This annual declaration encompasses a review of the results of self-assessments, line oversight, and ISMS reviews, as well as a review of performance against the past year's safety performance objectives, measures, commitments, and feedback mechanisms. This report documents the results of the performance and ISMS effectiveness for BSO and LBNL, and it identifies the strengths and weaknesses, areas for improvement, the resulting corrective and improvement actions, as well as the Integrated Safety Management objectives, measures, and commitments for the upcoming year.

Based on the evaluation of BSO's and LBNL's performance and ISMS effectiveness, both BSO and LBNL are effectively implementing Integrated Safety Management, with a few noteworthy weaknesses. The integrated BSO and LBNL ISMSs are implemented, although some aspects are immature, and needed improvements are being addressed to appropriately manage the risk and ensure protection of the workers, the public, and the environment while accomplishing the Office of Science mission. In accordance with the Office of Science guidance for field office ISM declarations, I have attached a copy of our ISMS effectiveness review summary report that documents the overall evaluations and conclusions regarding effectiveness of the BSO and LBNL ISMSs.

If you have any questions, please call me at (510) 486-4345.


Aundra Richards
Site Manager

**U.S. Department of Energy
Berkeley Site Office**



**Office of Science Berkeley Site Office
Annual Integrated Safety Management
Declaration Report**

November 2008

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List of Acronyms

ALS	Advanced Light Source
APP	BSO Annual Performance Plan
BSO	Berkeley Site Office
CAP	Corrective Action Plan
CFR	Code of Federal Regulations
DART	Days Away, Restricted, or Transferred
DOE	Department of Energy
EH&S	Environment, Health, and Safety (Laboratory Division)
EMS	Environmental Management System
ES&H	Environment, Safety, and Health
FEOSH	Federal Employee Occupational Safety and Health
FY	Fiscal Year
HSS	Office of Health, Safety, and Security
ISM	Integrated Safety Management
ISMS	Integrated Safety Management System
ISSM	Integrated Safeguards and Security Management
JHA	Job Hazard Analysis
LBNL	Lawrence Berkeley National Laboratory
LL	Lessons Learned
McCallum-Turner	McCallum-Turner Inc.
MESH	Management Environment, Safety, and Health
NTS	Noncompliance Tracking System
OE	Operating Experience
ORPS	Occurrence Reporting and Processing System
OSHA	Occupational Safety and Health Administration
PEMP	Performance Evaluation Management Plan
QAPP	Quality Assurance Program Plan
RPP	LBNL Radiation Protection Plan
SC	Office of Science
SCMS	Office of Science Management System
TAP	Technical Assurance Program
TQP	Technical Qualification Program
TRC	Total Recordable Cases
V&V	Verification and Validation
WSS	Work Smart Standards

Executive Summary

This annual Integrated Safety Management declaration encompasses a review of the results of self-assessments, line oversight, and ISM System (ISMS) reviews, as well as a review of performance against the past year's safety performance objectives, measures, commitments, and feedback mechanisms. This report documents the results of the performance and ISMS effectiveness for the U.S. Department of Energy (DOE) Berkeley Site Office (BSO) and Lawrence Berkeley National Laboratory (LBNL), and it identifies the strengths and weaknesses, areas for improvement, the resulting corrective and improvement actions, as well as the Integrated Safety Management objectives, measures, and commitments for the upcoming year.

During fiscal year (FY) 2008, BSO conducted 44 reviews and assessments (21 of which were environment, safety, and health-related reviews) that were performed by internal and external organizations on the Site Office and the contractors. In support of daily operational awareness, BSO Federal staff performed approximately 170 documented walkthroughs of contractor facilities/operations during FY 2008. The results of these walkthroughs were factored into the ISMS effectiveness analysis of LBNL.

BSO conducted an ISMS verification and validation effectiveness review in 13 LBNL divisions of 6 selected corrective actions that the contractor had identified as complete. It should be noted that this was not a complete ISMS review, but only a verification and validation of selected actions. In addition, some of the key functional assessments covered facility hazard categorization, electrical safety (lockout/tagout), fire protection, biosafety, transportation, and employee concerns. LBNL is currently developing and/or implementing corrective actions in response to these assessments. The Headquarters Office of Health, Safety and Security performed a review of nanoscale material safety, which identified no significant issues. BSO conducted two corrective action effectiveness reviews during FY 2008, one involving corrective actions to address recurring penetration permit violations and the second involving corrective actions to address Advanced Light Source (ALS) shielding control deficiencies. The effectiveness review to assess the penetration permit corrective actions concluded that the original corrective actions have been effective, as 98% of penetration permit activities since January 2007 have been conducted without errors. The corrective actions for the ALS shielding control deficiencies were found to be partially effective.

The BSO Federal staff and support services contractor total recordable case (TRC) rate and the days away, restricted, or transferred (DART) rate were both zero, which put them well below the Office of Science goals. However, the LBNL TRC and DART rates did not meet the Office of Science goals and indicated an increasing trend, primarily in the area of repetitive motion injuries. In FY 2008, LBNL and BSO conducted a benchmark study of best-in-class DOE laboratories to review their injury and illness reporting and case management practices, and the team is evaluating improvements that LBNL can make. In addition, LBNL and BSO personnel attended an Occupational Safety and Health Administration 30-hour course tailored to the hazards at the laboratory.

LBNL's occurrences show an increasing trend and include electrical near misses. LBNL performed trending and causal analysis of its occurrences in the Occurrence Reporting and Processing System and identified three recurring occurrences in the past three years (electrical safety management issues, subcontractor safety, and *LBNL Radiation Protection Plan* implementation deficiencies at the ALS). Corrective actions are underway, and most of them have progressed to initial rollout of the program improvements and division-by-division implementation.

Based on the evaluation of integrated LBNL and BSO performance and ISMS effectiveness, both BSO and LBNL are effectively implementing Integrated Safety Management, with a few noteworthy weaknesses. The integrated BSO and LBNL ISMSs are implemented, although some aspects are immature, and needed improvements are being addressed to appropriately manage the risk and ensure protection of the workers, the public, and the environment while accomplishing the Office of Science mission.

1.0 Integrated Safety Management (ISM) Declaration

In accordance with DOE Manual 450.4-1, *Integrated Safety System Manual*, this report documents the U.S. Department of Energy (DOE) Berkeley Site Office (BSO) Integrated Safety Management System (ISMS) annual effectiveness review of the Site Office and Lawrence Berkeley National Laboratory (LBNL). This declaration encompasses a review of the results of self-assessments, line oversight, and ISMS reviews, as well as a review of performance against the past year's safety performance objectives, measures, commitments, and feedback mechanisms. This report documents the results of BSO's analysis of performance and ISMS effectiveness for BSO and LBNL.

Based on the evaluation of integrated BSO and LBNL performance and ISMS effectiveness, both BSO and LBNL are effectively implementing their ISMSs, with a few noteworthy weaknesses. The integrated BSO and LBNL ISMSs are implemented, although some aspects are immature, and needed improvements are being addressed to appropriately manage the risk and ensure protection of the workers, the public, and the environment while accomplishing the Office of Science (SC) mission.

2.0 LBNL – Overview of Performance and ISMS Effectiveness

During fiscal year (FY) 2008, BSO conducted 44 reviews and assessments, 21 of which were environment, safety, and health (ES&H)-related reviews that were performed by internal and external organizations on BSO and LBNL. In support of daily operational awareness, BSO Federal staff performed approximately 170 documented walkthroughs of contractor facilities/ operations during FY 2008.

BSO conducted an ISMS verification and validation (V&V) effectiveness review in 13 LBNL divisions of 6 selected corrective actions that the contractor had identified as complete. It should be noted that this was not a complete ISMS review, but only a V&V of selected actions. In addition, BSO evaluated the trends for total recordable cases (TRC), days away, restricted, or transferred (DART), and occurrences entered in the Occurrence Reporting and Processing System (ORPS).

Overall, the results of the ISMS V&V indicate that LBNL has effectively implemented the selected corrective actions reviewed. However, for the Safety Coordinator Program, the Lessons Learned (LL) Program, the Self-Assessment Program, and facility safety documentation at the Advanced Light Source (ALS), some divisions' actions were considered partially effective. For example, the ALS was rated effective in all selected areas reviewed, except for the area of facility safety documentation, which should be corrected when the safety assessment document is revised later this year, and for ALS shielding control, where additional corrective actions are underway. In the area of self-assessment, two divisions' actions were also rated partially effective. (See Section 4.5 for additional details.)

Some of BSO's key functional assessments of LBNL covered facility hazard categorization, electrical safety (lockout/tagout), fire protection, biosafety, transportation, and employee concerns. LBNL is currently developing and/or implementing corrective actions as a result of these reviews. The Headquarters Office of Health, Safety and Security (HSS) performed a review of nanoscale material safety, which identified no significant issues. The HSS report on nanoscale material safety made several recommendations to strengthen the LBNL program and commended LBNL for practices such as using ventilated enclosures and personal protective equipment to control exposures.

BSO conducted two corrective action effectiveness reviews during FY 2008, one involving corrective actions to address recurring penetration permit violations and the second involving

corrective actions to address ALS shielding control deficiencies. The effectiveness review to assess the penetration permit corrective actions concluded that the original corrective actions have been effective, as 98% of penetration permit activities since January 2007 have been conducted without errors; however, some continuous improvement opportunities were noted. The corrective actions for the ALS shielding control deficiencies were found to be partially effective, and additional corrective actions are underway.

In support of daily operational awareness, the BSO Federal staff performed approximately 170 documented walkthroughs of LBNL facilities/operations during FY 2008. Through assessments, reviews, walkthroughs, and trending analysis, BSO determined that:

- LBNL needs to strengthen the rigor of its self-assessments.
- Although LBNL has made notable progress in formalizing and implementing the job hazards analysis (JHA) data management system (JHA Tracking System) that tracks worker training based on the job hazards, improvements are needed in implementation of the LBNL facilities' work order safety task analysis process.
- LBNL's facility hazard categorization process was found to be less than adequate, and weaknesses were identified in the facility authorization basis for the radiological facilities. Corrective action plans (CAPs) are being developed.
- LBNL's DART rate and near-miss performance require improvement and have negatively impacted LBNL's achievement of its annual performance goals.
- While LBNL has made progress in trending and analysis to support continuous improvement, additional improvements are needed.
- LBNL has weaknesses in its use of policies, procedures, and instructions; work planning and control; issues management; and self-identifying institutional safety program weaknesses.
- LBNL has programmatic weaknesses in fire protection, electrical safety, and biosafety. The electrical programs require improvement in safety management, work control, and conduct of operations.
- LBNL has identified recurring ORPS occurrences in electrical safety, *LBNL Radiation Protection Plan* implementation deficiencies at the ALS, and subcontractor management.
- LBNL strengths are in its reporting culture, the JHA process, construction safety, environmental protection, and chemical exposure prevention.

3.0 LBNL – Evaluation of the Work Planning and Control Process

3.1 Integration of the Environmental Management System (EMS) and Quality Assurance Program into the LBNL ISMS Description

The EMS, the Operating and Quality Management Plan, and the Contractor Assurance System are integrated into the ISMS. The LBNL ISMS description (LBNL/PUB-3140) contains a link to the EMS and illustrates the hierarchy of documents within the ISMS. A list of key implementing documents and a diagram of the relationship of the documents are provided in Section 7.

3.2 Implementation of the Nuclear Safety Management Rule (10 CFR 830)

In April and May 2008, BSO performed a facility hazard categorization review with the objective of determining LBNL's compliance with Title 10, Code of Federal Regulations (CFR), Subpart B, "Safety Basis Requirements," specifically as it relates to hazard

categorization of facilities. The review concluded that LBNL lacked the expertise and knowledge of 10 CFR 830, Subpart B, to ensure that facility hazard categorization is maintained below Hazard Category 3. As a result of this review, LBNL filed a Noncompliance Tracking System (NTS) report and is in the process of preparing a causal analysis of the findings and developing a comprehensive CAP.

3.3 Implementation of the Occupational Radiation Protection Rule (10 CFR 835)

LBNL submitted Revision 9 to the *LBNL Radiation Protection Plan* (RPP) on December 20, 2007. BSO formally disapproved the proposed revision on May 21, 2008. LBNL has resubmitted another revision to the RPP, and in the interim prior to BSO approval, LBNL continues to operate under Revision 8 of the RPP, which has not been revised to address the July 2007 update to 10 CFR 835.

3.4 Implementation of Worker Safety and Health Rule (10 CFR 851) Compliance as Related to Support Service Contractors

As a result of an LBNL quarterly performance analysis, Laboratory management identified recurring issues specific to subcontractor management that point to less-than-adequate subcontractor safety business processes. An occurrence report (SC-BSO-LBL-EHS-2007-0006) identified issues that include penetration permit violations, lockout/tagout and hazardous energy control concerns, and potential occupational exposures to lead and mercury. As a result of this review, LBNL filed an NTS report on October 19, 2007. LBNL has added a new chapter to the *Health & Safety Manual* (LBNL/PUB-3000) detailing the requirements for improved safety assurance. LBNL began implementing the program on a division-by-division basis in July 2008, and implementation is expected to be completed by December 31, 2008.

3.5 Status of Staff Training and Achieving Technical Certifications

LBNL continues to improve its work planning process by instituting the new JHA Tracking System, which replaces a long-standing but less activity-specific process. In this improved process, employees describe the work they perform, identify the associated hazards, and prescribe the controls. The new system provides institutional suggestions for controls, such as training and work practice requirements, but the supervisors and work leads are directed to exercise their line management authority and responsibility by customizing the institutional suggestions to fit individual situations. LBNL plans to assess and validate the use of the new JHA Tracking System during FY 2009 to determine what improvements may be required.

4.0 LBNL – Evaluation of the Contractor Assurance System

4.1 Effective Assurance Systems Documents

The LBNL Contractor Assurance System is made up of four key components: (1) ES&H assurance, (2) business assurance, (3) the Issues Management Program, and (4) the Operating and Quality Assurance Program. LBNL's Contractor Assurance System is well documented, and the key documents are listed in Section 7. The determination of ES&H effectiveness is composed of the following:

- Management ES&H (MESH) Assessments – These are internal but independent assessments of the divisions where managers review each other and provide an independent perspective. In FY 2008, the Safety Review Committee completed the Directorate/Operations MESH Review, and reviews of Earth Sciences, Accelerator and Fusion Research, Genomics, and Computing Sciences Divisions are in progress.

- Self-Assessments – LBNL divisions utilize the Self-Assessment Program performance criteria to evaluate their work activities, workplaces, and operations for conformance to safe practices and environmental stewardship. In FY 2008, LBNL performed an effectiveness review of the process and identified the following improvement opportunities: (1) broaden the scope of the self-assessments beyond the self-assessment performance measures, (2) provide further detail and analysis to improve this process, and (3) broaden communication of self-assessments results.
- Technical Assurance Program (TAP) – The TAP assessments focus on ES&H functional areas. LBNL is still implementing its ES&H TAP, which provides the framework for systematic reviews of ES&H programs and processes. Eight functional areas were assessed in FY 2007. In FY 2008, LBNL broadened implementation of the ES&H TAP to additional subject areas.

As described above, LBNL has taken steps to improve its ES&H Assessment Program during the last two years. However, a demonstrated weakness of this system is that it did not discover the items identified by DOE and discussed in Section 4.5.

4.2 Monitoring and Oversight, Management Involvement and Accountability at All Levels, and Communication of Expectations for Effective Implementation

At LBNL's request, McCallum-Turner, Inc. (McCallum-Turner) conducted an independent ISMS review in 2006 that resulted in seven recommendations. In response to Recommendation 1 on line accountability, LBNL implemented its new JHA Tracking System, which is discussed above in Section 3.5.

4.3 Effectiveness of LBNL Management Assessments Conducted Throughout the Year

At LBNL's request, McCallum-Turner personnel returned in 2008 to conduct follow-up effectiveness reviews of the CAP actions from the 2006 report. The follow-up report identifies opportunities for improvement in the areas of issues management, communication of expectations, corrective action development, and LL/operating experience (OE). The following subsections discuss feedback from this report and various other sources (internal, external and independent findings) and the identified opportunities for improvement.

Summary of the FY 2007 ES&H Self-Assessment Report: The *LBNL Environment, Safety and Health Self-Assessment Report, Fiscal Year 2007*, which was issued in January 2008, summarizes the results of LBNL's division self-assessments, MESH reviews, ES&H TAP assessments, and the University of California/DOE Contract 31 Appendix B Self-Assessment Assurance Program. All 17 divisions and directorates performed self-assessments and prepared reports that summarized these activities and appraised their ES&H performance. The Safety Review Committee conducted MESH reviews of the Physics; Engineering; Environment, Health, and Safety (EH&S); Life Sciences; and Nuclear Sciences Divisions. The EH&S Division piloted the new ES&H TAP and performed assessments of (1) the Chemical Hygiene and Safety Program, (2) controlled substances, (3) cranes, hoisting, and rigging, (4) external dosimetry, (5) preplacement medical evaluations, (6) radiological work area posting, (7) satellite accumulation areas, and (8) the Wastewater Discharge Program. The results from the new ES&H TAP reviews that were conducted indicate the divisions are adequately implementing these ES&H programs. However, the assessments also identified room for improvement in the institutional systems and division-level implementation of certain ES&H programs.

FY 2008 Technical Assurance Summary: In FY 2008, LBNL implemented the ES&H TAP in the following subject areas: (1) chemical hygiene and safety, (2) confined space, (3) construction safety, (4) controlled substances, (5) cranes, hoists, and rigging, (6) electrical safety, (7) ergonomics, (8) fall protection, (9) laser safety, (10) work leads, (11) medical

waste, (12) preplacement medical evaluation (TAP pilot only), (13) RPP elements, (14) respiratory protection, (15) satellite accumulation areas, (16) stormwater discharge, (17) wastewater discharge, and (18) X-ray safety. However, the DOE technical reviews demonstrated that the TAP assessment plans required greater focus on regulatory compliance. LBNL has strengthened its TAP leadership, is accelerating implementation in targeted areas, and is emphasizing requirements-based TAP assessments.

Safety Culture Survey: LBNL has performed a safety culture survey each year since 2005. One important purpose of the survey has been to measure employees' perceptions of management's commitment to safety using questions developed by the Occupational Safety and Health Administration (OSHA) and validated across multiple industries in the United States. Each year, the survey has shown that employees believe safety is a key value at LBNL and that their immediate supervisors are committed to safe work practices, supporting training, providing safety equipment, and planning work to minimize the risk of injury.

4.4 Effectiveness of Worker Involvement in Improving Feedback Processes, Management Approach for CAPs for Complex Issues, LL, and Improvement Opportunities for the ISMS

Worker Involvement: LBNL has established Laboratory-level qualification standards for Safety Coordinators and completed training, but some minor improvements will be needed to fully implement an effective program. The revised JHA process includes an enhanced process for worker involvement in work planning and acknowledgement of personal understanding and acceptance. In addition, the LBNL Facilities Division benchmarked two best-in-class DOE laboratories (Oak Ridge National Laboratory and Pacific Northwest National Laboratory). The result of this benchmarking activity was the creation of the Facilities Division Zero Accident Council, which increases worker involvement in management and direction of safety within the Facilities Division.

Management Approach for CAPs: The 2006 McCallum-Turner report recommended four improvements for the LBNL Corrective Action Tracking System: (1) clarify responsibilities of key personnel and expectations of line organizations, (2) assure the quality, consistency, and rigor of the root cause analysis and CAP processes, (3) expand the practice of trending and analysis to include TAP elements, and (4) systematically evaluate Issues Management Program performance. BSO personnel have performed effectiveness reviews of LBNL's progress in responding to these recommendations. In addition, SC Integrated Support Center personnel have performed quarterly V&V reviews of individual LBNL divisions' progress in implementing the recommendations. In most cases, the divisions have adequately implemented the recommendations.

LL Program: LBNL has implemented several improvements to the LL Program in the past two years. The improvements have included hiring an institutional LL Coordinator and developing an online LL and Best Practices Database. All LBNL staff can enter LL and best practices into the online database. The 2008 McCallum-Turner follow-up report noted several strengths and made two observations for improvement of the LBNL *Lessons Learned Manual* and program implementation.

DOE BSO has identified an opportunity for improvement of the LBNL LL Program with regard to sharing more LL with the DOE complex. LBNL submitted a LL to the Headquarters LL Database on October 3, 2008, which was the first one submitted since 1999. In addition, LBNL has not been current in submitting LL for ORPS recurring issues and significance category 2 issues. BSO will ensure that the contractor submits LL to the Headquarters LL Database, as required. In addition, BSO intends to conduct a follow-up review of the LBNL OE/LL Program and the BSO OE Program in the second quarter of FY 2009.

Improvement Opportunities for the ISMS: The McCallum-Turner follow-up report states that the LBNL institutional manuals reviewed by the team provide the framework for a comprehensive issues management program, and the program elements are being implemented. However, more clarity and detail are needed in the procedural aspects of the documents.

4.5 Results of Evaluation of Feedback from External and Independent Assessment Findings

The DOE BSO reviews performed during FY 2008 are discussed below.

Electrical Safety: BSO identified nine electrical safety findings based on violations of electrical safety codes and standards. The most significant of these findings was that the LBNL Lockout/Tagout Program is less than adequate. LBNL submitted a CAP, which was accepted by BSO in August 2008. In addition, LBNL submitted an NTS report.

Fire Protection: The BSO assessment team concluded that while the LBNL Fire Protection Program is documented, program elements are lacking and the current revision of the program documentation does not reflect all of the requirements in DOE Order 420.1B, *Facility Safety*. Several of the key program elements are not currently being performed, including program self-assessments, facility assessments, and fire hazard analyses. The assessment team observed that the lack of adequate staffing/resources was a contributing factor to the Fire Protection Program's shortcomings and weaknesses. LBNL implemented an immediate reallocation of staff, followed by hiring a new employee and a new contractor.

Facility Hazard Categorization: LBNL manages a number of facilities that utilize and store radioactive materials for scientific research purposes. These are classified as radiological facilities, and they are either maintained with inventory below Hazard Category 3 levels or they are the subject of a DOE-approved documented safety analysis. BSO's assessment identified the existing facility hazard analysis, the change control and categorization process, and the inventory control and accountability system as inadequate, which resulted in noncompliances with 10 CFR 830, Subpart B, "Safety Basis Requirements." In response, LBNL reduced the inventories, conducted an extent of condition review, and is currently developing a causal analysis and an associated CAP to avoid future noncompliances. LBNL also filed an NTS report.

Biosafety: BSO conducted a review of the LBNL Biosafety Program. Although the Biosafety Program contains all of the 10 CFR 851 criteria elements and addresses the requirements of the OSHA *Occupational Exposure to Bloodborne Pathogens Standard* (29 CFR 1910.1030), a programmatic noncompliance was identified at the institutional level. As a result of this review, LBNL filed an NTS report.

Transportation: During the last year, transportation safety has been addressed through internal and external resources. The LBNL EH&S Division and the Site Construction Coordinator and Traffic Engineer are developing a Traffic Management Pilot Car Program to manage significant construction traffic and facilitate the travel of large vehicles to specific construction sites in a safe manner. LBNL is utilizing traffic devices (handheld radar and a mobile unit) and stationary/mobile signage throughout the Laboratory to control traffic and promote transportation safety. In addition, an outside consultant is currently conducting a site-wide safety review of the pedestrian and traffic infrastructure.

A serious incident occurred in September 2008 involving an LBNL bus that lost its brakes and rolled downhill three blocks before the driver was able to turn it uphill on a side street to bring it to a stop. Fortunately, there were no injuries. All buses were immediately inspected by an outside company. Two of the buses were found to have minor brake problems unrelated to the one involved in the incident. They were both repaired promptly. The

Facilities Division's weekly bus inspection now includes brake pad thickness. In addition, a causal analysis is in progress, and corrective actions will follow.

Employee Concerns: BSO conducted an assessment of the LBNL Employee Concerns and Whistleblower Protections Program in December 2007. LBNL has corrected the identified issues.

Nanoscale Material: HSS performed a special review of work practices for nanoscale material activities at DOE laboratories that included LBNL. In its final report, HSS acknowledged that LBNL is making a concerted effort to apply the approach document provisions to its programs and practices. HSS further recognized that LBNL performed a gap analysis of its program and upgraded its institutional requirements based on that analysis. Moreover, the report commends LBNL for practices such as using ventilated enclosures and personal protective equipment to control exposures, implementing area posting and container labeling, and developing a portable clean room (by the Molecular Foundry) for monitoring purposes. However, the report notes that the degree of engineered nanoscale material safety varies at the bench level and from division to division. LBNL is conducting an extent of condition review based on the recommendations in the report and will develop a CAP to address these issues and to upgrade the Engineered Nanoscale Material Program.

Ventilation Program: BSO conducted a review of the Ventilation Program in April 2008. There were no findings resulting from this review.

McCallum-Turner Effectiveness Reviews: In September 2008, McCallum-Turner provided the interim results to date of its follow-up reviews of the progress and effectiveness of LBNL's CAP implementation from its 2006 ISMS review. Opportunities to further enhance the maturity and effectiveness of LBNL's actions were identified during the follow-up reviews, and these included recommendations for improving line accountability, the functionality of ISM documents, the performance management processes, issues management, and the self-assessment processes.

DOE BSO V&V Review of ISM CAP Action Completion from the McCallum-Turner Effectiveness Reviews: From September 29 to October 9, 2008, BSO conducted an ISMS V&V effectiveness review in 13 divisions of 6 selected corrective actions that LBNL had identified as complete. It should be noted that this was not a complete ISMS review, but only a V&V of selected actions. The review team found that LBNL has effectively implemented the selected corrective actions reviewed for validation. The team also verified that these specific corrective actions were closed. In the areas of the Safety Coordinator Program, LL Program, Self-Assessment Program, and facility safety documentation at the ALS, some divisions' actions were considered partially effective. For example, the ALS was rated effective in all selected areas reviewed, except for the area of facility safety documentation, which should be corrected when the safety assessment document is revised later this year.

The Facilities Division has the most complex work, involving varied work environments and associated hazards, and in one instance, it was rated ineffective. It was rated ineffective because the review team found there were many instances where systems and paperwork need to be clarified and processes either developed or documented so that workers will have a clear understanding of the hazards and expectations.

In the area of LL, information is effectively flowing out to the individuals in facilities; however, additional emphasis on LL flowing back from facilities into the LL System needs to be accomplished. In the area of self-assessment, two divisions were rated partially effective. General strengthening of the rigor of the self-assessment reviews should provide the necessary focus.

In addition to the 13 divisions reviewed, the V&V team interviewed LBNL and University of California management officials to gain their perspective on selected areas of inquiry. The team determined that all levels of management interviewed concerning their safety values, principles, and expectations are fulfilling their duties. These individuals were able to articulate how these responsibilities are being fulfilled and what methods are being used to obtain feedback.

4.6 Outcomes of OE Information, Trending Analysis of Operating Data, ISM-Related Factors in NTS, ORPS, and the Computerized Accident Incident Reporting System

As previously noted, the LBNL system documents provide the framework for a comprehensive issues management program (including analysis of causes, identification of corrective actions, corrective action tracking, monitoring and closure, verification of effectiveness, trend analysis, identification of continuous improvement opportunities, and LL), and the program elements are being implemented. However, more clarity and detail are needed in the procedural aspects of the documents.

BSO has identified that LBNL has an increasing trend in ORPS occurrences, NTS incidents, and injury/illness reporting. From the perspective of encouraging incident reporting, this reflects that LBNL is not reluctant to report, which is a strength. With regard to the illness/injury reporting, the LBNL trends indicate that the first aid cases are increasing faster than the recordable cases, which can be indicative of employee willingness to seek care and which provides increased opportunities for intervention to prevent recordable injuries. LBNL demonstrated increased ORPS reporting in FY 2008, with a total of 28 occurrence reports submitted (16 reports in FY 2005, 17 in FY 2006, and 22 in FY 2007). This trend can be viewed as a concerted effort by LBNL to develop a stronger reporting culture as the cornerstone of continuous ISM improvement. The filing of three Category R (recurring) occurrence reports over the last three years (i.e., electrical safety management, subcontractor safety, and RPP implementation deficiencies at the ALS) is also indicative of LBNL's commitment to trending, analysis, and reporting of recurring issues. While BSO supports LBNL's efforts to report occurrences and incidents, the increasing DART rate and the volume of near misses and serious management concerns are of grave concern to DOE, and BSO is closely monitoring incident investigations and follow-up actions.

LBNL's safety performance in construction is considered a strength. During FY 2008, LBNL estimates that it will execute more than 80 capital and small-project construction projects representing approximately \$200 million and involving more than 60,000 hours of subcontract labor. No LBNL-recorded lost-time or recordable injuries occurred this year for construction work (TRC = 0 and DART = 0). In August 2008, LBNL achieved three years without a construction lost-time injury. This strong performance is significantly better than the industry average. The current TRC rate for construction for the most recent three-year average is approximately 2.0, which is 70% below the national average for construction of 6.4, as documented by the Bureau of Labor Statistics.

Nonetheless, LBNL has increasing DART rates. LBNL did not achieve its Performance Evaluation Management Plan (PEMP) goals or the SC goals for the TRC rate or the DART rate in FY 2008. The predominant occupational injuries at LBNL continue to be trips, scrapes, falls, and ergonomic injuries. The most serious individual recordable accidents during fiscal year 2008 were a broken wrist due to a trip and fall, a fractured toe due to a falling object, and a fractured forearm due to a trip and fall. Based on the statistical predominance of ergonomic injuries, LBNL is focusing on musculoskeletal injuries (ergonomic injuries). However, even when the ergonomic injuries are screened out, LBNL's DART and TRC rates are higher than the SC goal rates. LBNL consequently received a negative performance rating in this area.

The Joint Genome Institute sponsored a safety stand-down in December 2007 to re-baseline the production activities and better ensure the safety of their workers following six recordable ergonomic injuries in early FY 2008. The stand-down resulted in a human factors evaluation, re-engineering the production line, and development of new procedures for each work area. The production staff received training in the improved process and procedures. In FY 2008, LBNL and BSO conducted a benchmark study of best-in-class DOE laboratories to review their injury and illness reporting and case management practices, and the team is evaluating improvements that LBNL can make. In addition, LBNL and BSO personnel attended an OSHA 30-hour course tailored to the hazards at the laboratory.

BSO performed its own trend analysis of the data and continues to be concerned about the increase in the DART rates and the recurring issues reflected in the three recurring issues identified in ORPS. LBNL's corrective actions are underway, and most of them have progressed to initial rollout of the program improvements and division-by-division implementation. BSO will continue to closely monitor LBNL's efforts to address the underlying causes of these adverse trends. In addition, BSO will use the PEMP process, formal and informal oversight activities, and continued trending of the data.

5.0 LBNL – Evaluation of ISM Performance Against the PEMP

5.1 Effectiveness of Achievement of ISM Performance Against the FY 2008 PEMP

Goal 5.0 identifies the ES&H and ISM contract commitments for LBNL. Goal 5.0 has three objectives and nine measures. While it appears that LBNL has met the targets for most of the measures within the goal (excluding the DART and TRC goals as previously described), performance against the rating gradients will not be the only source of information used for the performance evaluation of Goal 5.0. BSO oversight activities have identified various opportunities for improvement in key areas such as strengthening safety line management ownership, the Technical Assurance Program, and facility safety authorizations. This information as well as incidents and other trending data will be taken into consideration when FY08 performance is finalized in January 2009.

5.2 ISM Objectives, Measures, and Commitments for the Upcoming Year

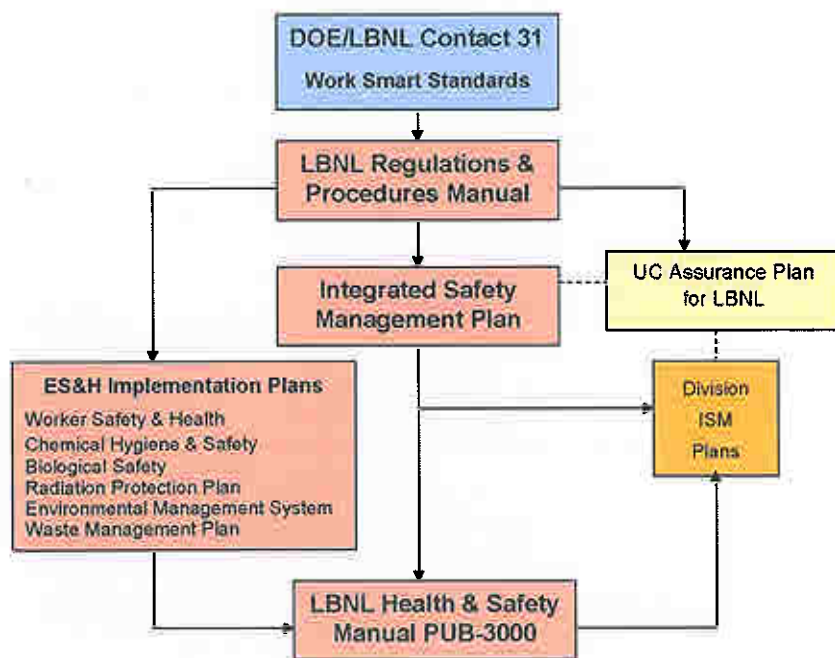
BSO extensively revised Goal 5.0 for FY09 to incorporate opportunities for improvement identified through daily oversight activities and implementation of the BSO FY08 assessment schedule. Measures were either added or modified to strengthen implementation of the 10 CFR 851, 10 CFR 830 and 10 CFR 835 programs, as well as other accelerator and facility safety requirements. It is anticipated that further enhancements will be made to the ISM performance metrics during the FY09 mid year modification based upon additional opportunities for improvement that will be identified during the upcoming ISM review.

6.0 LBNL – Evaluation of the ISMS Description

The *Integrated Environment, Health & Safety Management Plan* (LBNL/PUB-3140) contains the LBNL institutional approach for the incorporation and implementation of the *DOE Safety Management System Policy* (DOE P 450.4). It links the Work Smart Standards (WSS) set to LBNL's operations by providing direction, guidance, and appropriate safety behaviors needed to conduct all activities and operations in compliance with the WSS set. With final approval by BSO, the Management Plan establishes the agreement on the content and processes for ISMS implementation and continued utilization at LBNL. The figure in Section 7 illustrates the LBNL document hierarchy and the functional relationship between the DOE contract and WSS set and the LBNL ES&H policy and implementing elements.

7.0 **LBNL – Key Implementing Documents**

The most significant implementing documents are listed below. The hierarchy of these documents is shown in the figure from the LBNL *Integrated Environment, Health & Safety Management Plan* (LBNL/PUB-3140), Figure 2.1.



- LBNL/PUB-201, *Regulations and Procedures Manual (RPM)*
- LBNL/PUB-3140, *Integrated Environment, Health & Safety Management Plan*
- LBNL/PUB-3000, *Health & Safety Manual*
- *LBNL Work Smart Standards (WSS) Set*
- LBNL/PUB-3851, *Worker Safety and Health Program*
- LBNL/PUB-3180, *Environmental Management System Plan*
- LBNL/RPP, *LBNL Radiation Protection Program for Lawrence Berkeley National Laboratory*
- LBNL/PUB-5341, *Chemical Hygiene and Safety Plan*
- *Biological Safety Program Manual*
- LBNL/PUB-3111, *Operating and Quality Management Plan (OQMP)*
- LBNL/PUB-3092, *Guidelines for Generators to Meet HWHF Acceptance Criteria*

8.0 **BSO – Performance and ISMS Effectiveness**

During FY 2008, BSO performed an ISMS V&V review to determine the effectiveness of its corrective actions from the 2006 ISMS self-assessment. BSO found that 21 of 29 actions were effective, and 8 actions were partially effective. The majority of the necessary systems are in place to support an effective ISMS; however, implementation, formality, and rigor need improvement. Therefore, BSO is effectively implementing ISM, with a few noteworthy weaknesses. BSO needs to strengthen the rigor of self-assessments. In addition, while progress has been made in trending

and analysis to support continuous improvement, additional improvements are needed in the BSO trending and analysis programs.

9.0 BSO – Evaluation of the Field Work Planning and Control Process

9.1 Integration of the EMS and Quality Assurance Program Plan (QAPP) into the BSO ISEMS Description

The *BSO Integrated Safety and Environmental Management System (ISEMS) Description* ensures that the EMS, ES&H, QAPP, and Integrated Safeguards and Security Management (ISSM) Program are integrated into one management system, which is described in the *BSO Management System Description*. This document establishes the framework for rigor and discipline in BSO's operations. BSO provides additional detailed descriptions of these management system elements in the *BSO ISEMS Description*.

9.2 Effectiveness of the Federal Occupational Safety and Health (FEOSH) Program

BSO organizations are expected to maintain a viable safety program and a performance assessment process for their Federal activities. The FEOSH Program is designed to ensure that safe and healthful workplaces are provided for the Federal workforce in accordance with 29 CFR 1960, *Basic Program Elements for Federal Employee Occupational Safety and Health Programs and Related Matters*. BSO has a documented FEOSH Program (*BSO Federal Employee Occupational Safety & Health Program Manual*). The following strengths were identified for the FEOSH Program during the FY 2008 program review:

- Injury/illness statistics are zero for the DART rate and zero for the TRC rate for both BSO and its support services contractors, which put them well below the SC goals.
- BSO personnel have been performing FEOSH walkthroughs of the Federal office space. The 2008 walkthrough identified a need to investigate some wall panels for asbestos. These were tested and shown to be free of asbestos.
- BSO has an initiative to improve communications among the Federal staff, such as enhancing communication of day-to-day safety messages, improving the sharing of day-to-day OE information, and expanding LL sharing to include both industrial and office-specific safety. These improvements will be implemented both online and through all-hands meetings. BSO has a good system for orienting new employees in the FEOSH Program, and it includes emphasizing the importance of notification in the event of accidents or emergencies.
- BSO has performed a number of ergonomic evaluations during FY 2008. A copy of each evaluation is provided to the employee, the FEOSH Program Manager, and management.

The FEOSH Program Assessment performed during FY 2008 identified that BSO has an effective program, but it noted areas for improvement that will be tracked to completion in ORION. For FY 2009, BSO has identified a follow-up assessment on the *BSO Integrated Assessment Schedule* to review the status of the FEOSH Program improvements.

9.3 Effectiveness of Implementation of Worker Safety and Health Rule (10 CFR 851) Compliance as Related to Support Service Contractors

BSO has three support services contractors, two under BSO's purview and one provided by the DOE Chicago Office. CE2 Corporation provides administrative support and is covered by the BSO FEOSH Program. Exeter is also a support service contractor; however, Exeter is a utility expert and does not have an onsite presence. Therefore, Exeter's personnel are

covered under the Exeter Health and Safety Plan. The other support service contractor is an information technology company, Chickasaw Nation Industries, which falls under the purview of the Chicago Office FEOSH Program.

All support service contractor personnel receive the General Employee Radiation Training for the site. In addition, the BSO Contracting Officer provides a site briefing. Anyone who is badged for the site is provided a briefing on the FEOSH Program, notifications, etc. BSO is enhancing its program for providing a site orientation and emergency procedures for short-term, nonbadged visitors to the Site Office.

9.4 Status of Staff Training and Achieving Technical Certifications

BSO's goal is to maintain a workforce sufficient in number, diversity, and technical qualifications to oversee the contractors and ensure that activities are being conducted in a contract-compliant manner. BSO is currently filling two vacancies.

BSO is committed to having an appropriately trained workforce to ensure the proper execution of mission activities. As part of that commitment, in conjunction with the contractor, several BSO staff members attended an OSHA 30-hour training course at the site during FY 2008. Through BSO's recruitment and hiring process, the Site Office ensures that it hires trained, qualified staff to perform oversight. Each employee has a position description that defines the roles, responsibilities, knowledge, skills, and experience that are necessary to fill that position. It is intended that any knowledge and skill gaps, and the plan to fill those gaps, be identified in the employee's Individual Development Plan. BSO has a basic Technical Qualification Program (TQP) in place. All technical personnel identified for the TQP have completed the *General Technical Base Standard*, except the new hires that are in the process of completing it. BSO will perform a management assessment of the revised TQP in early FY 2009, and the results will be used to adjust the program, as needed. Any issues that are identified will be put into a CAP and tracked to closure in ORION.

10.0 BSO – Evaluation of the Assurance System Regarding ISM Performance

10.1 Field Assurance Systems Documents

BSO has a well-documented assurance system, and the key documents are listed below in Section 12.

10.2 Monitoring and Oversight, Management Involvement and Accountability at All Levels, and Communication Expectations for Effective Implementation

BSO's contractor oversight programs are defined, documented, implemented, and staffed with personnel that have the necessary expertise to conduct oversight activities. Performance assessments are used to measure BSO's performance against mission, goals, and objectives, etc., and to provide feedback mechanisms for needed improvements and corrective actions. The performance assessment process consists of four elements: (1) performance assessments (self-assessments and independent or third-party assessments), (2) performance indicators, (3) employee performance plans and appraisals, and (4) BSO status and feedback activities. This process is intended to assure BSO's compliance with program requirements and line management oversight of ES&H responsibilities as stipulated in the *Safety Management System Policy* (DOE Policy 450.4), the *Department of Energy Oversight Policy* (DOE Policy 226.1A), the *Integrated Safety and Environmental Management System Description*, and the applicable portions of the SC Management System (SCMS).

BSO prepares and implements the *BSO Annual Performance Plan* (APP), which is an overarching plan to establish and track its progress in meeting annual milestones and performance objectives throughout the fiscal year. The BSO APP ties to the DOE Strategic

Plan via the goals and applicable key intermediate milestones, ties to the President's Management Agenda via the goals and the applicable DOE objectives, and is cross-walked with the *Office of Science Strategic Plan* to show the areas of BSO support. BSO routinely reviews and statuses its progress against the APP, and 88% of the APP tasks were completed in FY 2008, with the majority of the tasks completed on time or ahead of schedule. BSO senior management uses a red-yellow-green system to provide a visual assessment of each milestone. The BSO Manager holds the individual Division Directors accountable for meeting their assigned milestones and for the contractor's performance in their area of assigned oversight. Areas of concern and issues are addressed as part of the BSO feedback and improvement process.

Commitments in the APP flow to each BSO division, which must have supporting commitments, these commitments flow down to actions in the Individual Performance Plans. Every performance plan contains a safety element. The ES&H Division staff is also accountable for field time commitments.

BSO maintains a tracking mechanism to manage its APP commitments, which are reviewed and statused on a regular basis. Some of the supporting/implementing commitments and actions are tracked in SMART. The BSO Oversight Program, including issues management, is tracked in ORION. BSO has scheduled several assessments during FY 2009 that may identify further improvements in communications and processes.

BSO has implemented a management assessment process for its internal activities. BSO's performance is also monitored through regularly scheduled status and performance reviews, such as staff meetings and all-hands meetings. One area identified for improvement is status and feedback. BSO is evaluating improvements needed in the formality (documentation) of the status and feedback mechanisms to enhance monitoring and communications. BSO recently completed an independent trending analysis of occurrences, injury and illness logs (including first aid), issues identified during assessments and walkthroughs, and issues entered in NTS. The results of this trend analysis were factored into the annual assessment planning process for FY 2009. BSO personnel meet with the contractor routinely to review trends, including the first aid and injury/illness logs.

BSO management holds regular briefings between the BSO ES&H Division and the Federal Project Directors to review the project status and issues. The BSO Manager holds a monthly all-hands staff meeting that provides an opportunity for Site Office employees at all levels to provide feedback and to hear the status of important site activities. BSO personnel are required to document their oversight activities in ORION. During January 2008, BSO conducted an offsite, all-hands meeting for BSO, LBNL, and Stanford Site Office personnel to improve communication and identify process improvements. The meeting provided a mechanism for communication at all levels, and the attendees broke out into teams to develop process improvement mechanisms. The outcomes were recorded and acted upon.

10.3 Outcomes of OE Information, Trending Analysis of Operating Data, ISM-Related Factors in NTS, ORPS, and the Computerized Accident Incident Reporting System

Through weekly meetings and review of contract deliverables (e.g., the quarterly ORPS trending analysis), BSO ensures that the contractor is adequately performing Price-Anderson Amendments Act Rule compliance screening, including 10 CFR 851 injury/illness reporting and trending. The results of these meetings are routinely shared with senior management.

The contractor is performing the required quarterly analysis of ORPS reportable and nonreportable issues and reporting the results to BSO. As a result of these analyses, the contractor identified three recurring issues for the past three years and entered these in ORPS as such. BSO performed a trending analysis and conducted a for-cause review of the

contractor's electrical safety program during FY 2008, which identified some additional issues to be corrected. BSO sent Letters of Concern, as needed, to drive contractor performance improvement. In addition, BSO increased its oversight in the areas where the recurring issues were identified. BSO is ensuring that the contractor continues to perform these analyses and report the results. BSO also reviewed the contractor's hazard categorization and required the contractor to submit a CAP based on the results of this review.

10.4 Effectiveness of Field Oversight and Assessments

BSO has been effective in identifying issues, as evidenced by the seven ES&H assessments that BSO conducted of the contractor during FY 2008: (1) for-cause review of electrical safety, (2) fire protection, (3) facility hazard categorization, (4) employee concerns, (5) biosafety, (6) ventilation, and (7) V&V of ISMS corrective actions. Other mechanisms that BSO uses for conducting oversight include performing operational awareness walkthroughs, holding routine project status meetings, reviewing the contractor's trending analyses, monitoring the PEMP, and monitoring the status of the APP commitments. As a result of negative trends in safety performance, the Site Office sent Letters of Concern, as needed, to the contractor. BSO conducts ongoing discussions with the contractor regarding performance and emerging issues. Using the DOE Conditional Payment of Fee contract clause, BSO has the option to reduce the contractor's fee to drive improvement through the PEMP and the performance evaluation process. BSO requested and received CAPs from the contractor during FY 2008. As previously noted, BSO tracks assessments, walkthroughs, and DOE-identified issues to closure in ORION.

10.5 Effectiveness of Field Management/Self-Assessment

During FY 2008, BSO performed an ISM effectiveness V&V review of the corrective actions from the 2006 BSO ISMS self-assessment. The review was completed in September 2008. During this review, BSO determined whether the actions were effective, partially effective, or ineffective. BSO found that 21 out of 29 actions (73%) were effective. The remaining 8 actions were determined to be partially effective.

Based on the review results, which included observations and interviews with BSO staff, it is evident that the framework for the BSO ISMS exists and is documented; however, the level of implementation varies across the ISM core function areas, which impacts the effectiveness of the ISMS. The level of rigor and formality of BSO's oversight of LBNL's ES&H programs has improved, and it has had a positive effect on both BSO's and LBNL's ISMS. BSO's processes will be continually evaluated as familiarity with the SCMS documentation increases, with the expectation that an institutionalized ISMS implementation process will increase its effectiveness as the program matures.

10.6 Effectiveness of Worker Involvement in Improving Feedback Processes, Management Approach for CAPs, LL, and Improvement Opportunities for ISM

Worker Involvement: BSO uses communication between staff in the regularly held division meetings and all-hands meetings to improve BSO's processes. BSO's relative size and the proximity of its staff allow for ease of verbal communication and feedback. However, BSO recognizes the need to implement more formal communication tools to ensure that important information reaches all staff members in a timely manner. In addition, BSO and the Stanford Site Office jointly conducted an offsite, all-hands meeting during FY 2008 to improve existing communication methods and processes.

Management Approach for Corrective Action Plans: BSO relies on the ES&H Division Director to communicate the status of corrective actions to senior management in weekly meetings. All BSO CAPs are tracked in ORION. The LBNL issues discovered through BSO

oversight are also tracked in ORION. The issues discovered through LBNL's internal assurance processes and the associated corrective actions are tracked in the contractor's system, which is subject to independent review by BSO.

LL Program: BSO's OE Program is documented. An OE Coordinator has been designated and is fulfilling the BSO role, as well as providing oversight of the LBNL OE Program. BSO's OE Program implements the *DOE Corporate Operating Experience Program* (DOE Order 210.2) requirements and the applicable portions of the SCMS.

Improvement Opportunities for the ISMS: BSO reviewed the effectiveness of its ISMS during FY 2008 and, as a result of this review, developed a plan to enhance the program. For example, BSO recognizes that it provides initial ISM training for Federal employees, but it has not institutionalized annual refresher training for the staff and direct support service contractors. In addition, BSO is performing a comprehensive review of its management documents and updating various procedures and manuals, as needed. BSO will also develop a comprehensive index of its procedures.

10.7 Effectiveness in Identifying Deficiencies and Driving Improvements in the ISMS

BSO utilizes the contractually defined process in Clause H.18 to add new/revised DOE directives to the contract.

10.8 Results of Evaluation of Feedback from External and Independent Assessment Findings

The results of the HSS review of the LBNL Nanoscale Materials Program indicated there are no weaknesses in BSO's oversight of the program.

As a result of the 2006 McCallum-Turner review, LBNL established Laboratory-level qualification standards, but the 2008 follow-up review identified some minor improvements that are needed to fully implement the intent of the recommendation. In its Three-Year Assessment Plan, BSO has identified a review of LBNL's ES&H training to confirm implementation and sustainability.

10.9 Effectiveness of the Issues Management Program

The BSO Issues Management Program is documented; however, BSO identified some needed improvements as a result of the independent review performed during FY 2008. Actions are underway for improvement, such as hiring a dedicated Management Analyst. In addition, BSO is evaluating the formality and rigor of the program.

11.0 BSO – Results of ISM-Related Performance Against the FY 2008 Safety Objectives, Measures, and Commitments

11.1 Effectiveness of Achievement of ISM Performance Objectives, Measures, and Commitments and Areas of Improvement

Refer to the *BSO FY 2008 Annual Assessment Report* and the BSO FY 2008 APP status.

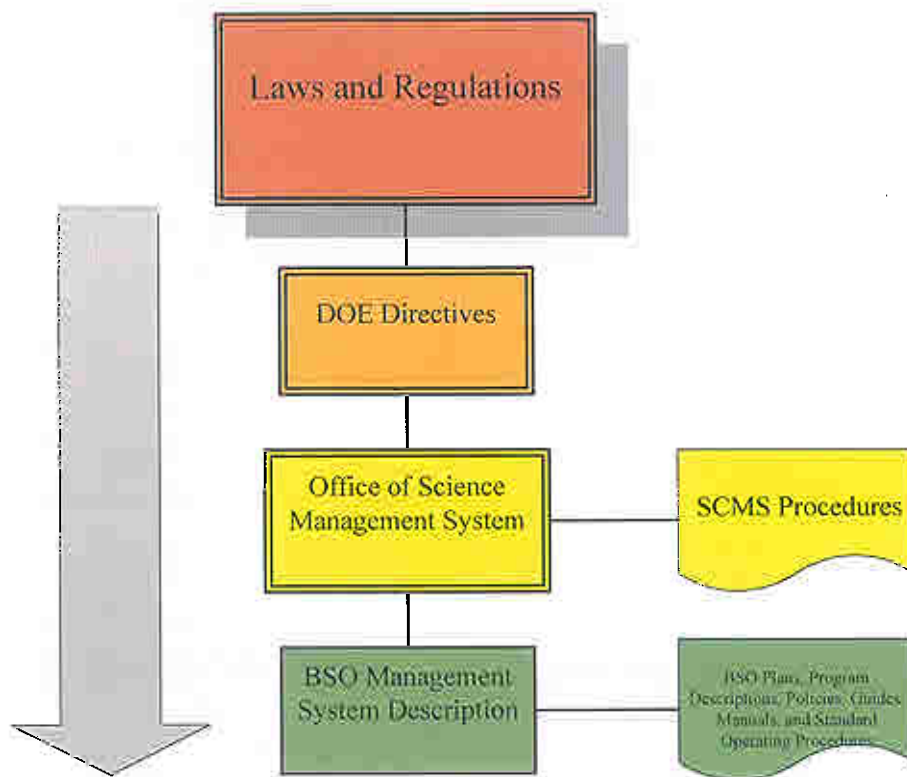
11.2 ISM Objectives, Measures, and Commitments for the Upcoming Year

Refer to the BSO FY 2009 APP.

12.0 BSO – Key Implementing Documents

The most significant BSO implementing documents are listed below. BSO will implement the SCMS by the end of calendar year 2008. The diagram shown below provides the document hierarchy of BSO's key ISM implementing documents. While BSO's processes and systems will

be revised, as appropriate, to support the SCMS, significant changes to the *BSO Management System Description* are not anticipated.



- **BSO Management System Description** – This document provides a comprehensive, high level-description of BSO, and it provides focus on its two main responsibilities: (1) management of the Federal staff and office (2) management of the contracts.
- **ES&H Program Plan** – The plan describes the lines management responsibilities and associated oversight activities for LBNL (operational awareness, contractor assessments, BSO self-assessments, the Three-Year Assessment Plan, and Integrated Assessment Schedule, etc.). It also describes other oversight activities for key functional areas. It is the implementing document for DOE Order 226.1A and the *BSO Oversight* (BSO-SOP-226.1). BSO's assessments and walkthroughs are tracked to completion in ORION.
- **BSO Contract Management Plan** – The plan describes BSO's procedures and processes to assure that the terms and conditions of the management and operating contract are met by the contractor and DOE.
- **BSO Quality Assurance Program Plan (QAPP)** – The QAPP is a management tool to ensure BSO's missions, policies, and objectives are integrated into business practices and work practices for Federal operations and contractor oversight.
- **Lessons Learned Program (BSO-SOP-210.2)** – This standard operating procedure documents BSO's Operating Experience Program. BSO and the contractor have designated OE Coordinators. This document implements DOE Order 210.2 and the SCMS.

- Integrated Safety and Environmental Management System (ISEMS) Description – This document describes the ES&H, quality assurance, ISSM, and EMS mechanisms used for BSO to implement the ISM core functions and guiding principles.
- BSO Federal Employee Occupational Safety & Health Program Manual – The manual describes the FEOSH Program to ensure that BSO employees receive the information and resources needed to achieve and maintain a safe and healthy work environment.
- BSO Continuity of Operations Plan – This plan establishes the assurance of the continuity of essential functions in the event of specialized emergency conditions that may disrupt normal BSO operations.
- Functions, Responsibilities & Authorities Manual (FRAM) – This manual describes the safety management functions, responsibilities and authorities for federal staff. The BSO FRAM also describes the corresponding implementation mechanism for performing safety requirements.
- Technical Qualification Program Manual – This manual establishes the training and qualification requirements for technical personnel responsible for safe operations.
- BSO Assessment Program Manual – This manual describes the roles, responsibilities, and basic processes to be used for implementing the BSO Assessment Program.